

# RESEARCH HIGHLIGHTS

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## TOWN OF MILTON ECO-TECH VILLAGE PILOT PROJECT URBAN DESIGN CHARRETTE: MAKING CHOICES TOWARDS SUSTAINABILITY

### INTRODUCTION

One of the genuine challenges of creating sustainable communities is to instill the belief that it is a possible and real alternative to contemporary community development. Often the response to sustainability is that it is too great a challenge or too significant a change to the status quo to be a viable alternative. The Eco-Tech Village Pilot Project was borne from the idea that changes are possible, that the initiative for this change must be led by the Municipality and that all partners to the development process, including the private sector, must be involved and engaged.

This urban design charrette for the Eco-Tech Village Pilot Project came from the need to develop a visual image of the emerging concepts of sustainable neighbourhoods and to provide a forum for the integration of many of the directions established by the process to date. This step was not intended to be the end of a process but a link between the initial visioning exercises and the actual creation of concrete development options for the site.

### Why the Eco-Tech Village?

The Town of Milton will be experiencing a period of rapid growth over the next 20 years. One of the questions raised in response to this change is how the community can accommodate this growth while reducing the ecological impact of this growth. The Eco-Tech Village Pilot Project was initiated by the Town of Milton in response to the growing interest in ecological sustainability within the community and the real sense that the local municipality has a role to shape and direct growth. It is strongly felt that, if the Town takes the lead role in stating that ecological sustainable practices are a priority, genuine change will be the result.

The process was initiated in January 2001 with a visioning exercise which culminated in the preparation of the report, *An Eco-Tech Village for Milton Considerations for Policy* also known as the Green Paper.

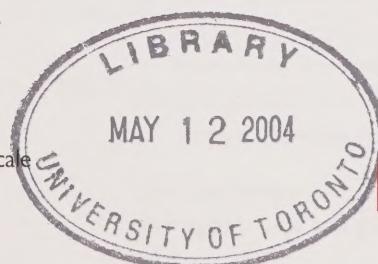
The Green Paper, which was developed from the results of this workshop, sets out six principles for the village.

**I. Solutions Grow from Place** – The village is to be small scale and responsive to local conditions and people.

2. **Make Nature Visible** – Natural Process is the best model of how to live sustainably. Good design increases ecological understanding and awareness of how to minimize destructive impacts.
3. **Design with Nature** – Natural processes can be used as a model for sustainable design using the local landscape and climate as a guide to what works.
4. **Ecological Accounting Informs Design** – Full-cost accounting of all building materials and processes is important.
5. **Communication Technologies Facilitate Flexibility** – Integrate state of the art advanced telecommunications infrastructure into buildings to facilitate flexible, adaptive, live-work spaces.
6. **Everyone Participates in Design** – Listen to every voice in the design process.

The Eco-Tech Village has been described by the Town of Milton as a concept “which not only promotes a residential community based on the environmental principles of sustainable development and sustainable living but that promotes the most current technological advancement and practices as well as fiscal responsibility and municipal governance”. Milton staff’s vision includes, but is not limited to, a neighbourhood that encompasses the following principles:

- Environmental sustainability
- Ecological sensitivity
- Energy efficiency
- Financial accountability
- Economic viability/marketability
- Technological advancement
- “Smart Growth”



The overall concept for the Eco-Tech Village was initially based on the idea of reducing the ecological footprint of development. It is premised on a rethinking of our relationship with nature and the development of more sustainable approaches.

In May-June 2002, a series of five workshops was held with participants from all government levels and the private sector.

Issues and options were investigated at these workshops. An Implementation Options Report was prepared in accordance with the outcomes from the workshop process. The Implementation Options Report scoped and provided direction for the Eco-Tech Village Pilot project and set out the draft proposed Secondary Plan policies. Holding an Urban Design Charrette to provide a forum for assessing the issues on a collective basis was a specific recommendation of that report.

### **Eco-Tech Village Pilot Project Study Area**

The Eco-Tech Village is proposed to be located within Phase 2 of the Town of Milton Urban Expansion Area which is located to the west of the existing built-up area. The intended timeline for initiating the development of this portion of the community is 2004-2006 and is dependent on the timing of availability of water and wastewater servicing.

Although a specific study area has been identified for the Eco-Tech Village Pilot Project and the charrette process, it is important to note that the proposed draft secondary plan policies would allow for an Eco-Tech Village to be built anywhere within the Phase 2 area. For the purpose of the charrette, a site was selected which had no significant environmental constraints. It was important to this exercise that the site selected could be replicated anywhere in Milton. There was a concern that selecting a site with a woodlot or other environmental features would support the argument that the concepts would work only at locations with those constraints. The current study area removes that issue from the table.

The site under consideration for this charrette is located at the northeast corner of Louis St. Laurent Boulevard and First Line. It has an area of 20 hectares and contains both a portion of a secondary mixed-use node (10 hectares), a residential neighbourhood (10 hectares), and a storm water management pond and, for the charrette exercise, a village square.

### **Charrette Planning Process**

The charrette was constructed with three design teams, each led by an Urban Designer with experience in sustainability issues and with a familiarity with the Town of Milton. Participants at the charrette included representation of all levels of government (federal, provincial, regional and local), Mattamy Development Co.—the private developer for this site—and technical experts.

This extensive experience at the charrette was augmented with international expertise in energy efficiency and solar design from the Netherlands.

Each design table was structured to have a broad cross-section of background and expertise to provide a range of opinions and ideas to contribute to the design process. The charrette process also provided an excellent opportunity to educate municipal staff regarding the options and possibilities in community design and sustainability.

### **Charrette Event**

The charrette was held over 2½ days. The first evening commenced with introductions, which set the tone of the charrette and demonstrated to all participants the political and administrative support for the process and the future implementation of the charrette results. These presentations were followed by a short history of the eco-tech process and a bus tour of the historic Milton Urban Area as well as the recently constructed new development areas. The pattern of development elsewhere within the new growth areas of Milton has been designed, in part, on the principles of new urbanism. The bus tour was invaluable as many participants were not familiar with the Town prior to attendance at the charrette. After the bus tour, presentations covering background information on the planning context for the village and other initiatives such as the *Sustainable Development Standards Manual* were held.

The second day of the charrette started with a general introduction of how the day would be structured as well as a presentation on energy options. The groups divided into the work teams and were provided a set of detailed instructions setting out the primary expectations regarding products for each team at the charrette. At the end of the charrette, a closing ceremony was held to present the charrette results.

After the charrette, the drawings produced were polished by the three urban design team leaders to provide additional labelling, colouring and shading to ensure that they would read well when finally reproduced. The three lead designers and the facilitators also met to reflect on the lessons learned through the charrette process and to identify the common elements for any future design for an Eco-Tech Village.

Prior to the charrette, each participant was provided with a design brief so that they would be familiar with the objectives and studies completed to date for the Eco-Tech Village project. The additional purpose of the design brief was to provide an understanding as to what sustainable development is and the types of choices that could be made. All three teams were provided with a design summary to guide their work (Table 1).

**Table I—Design Summary**

As set out within the agenda, the work program for the charrette will focus on both the community elements and the master plan for the Eco-Tech Village. As we go through each of these workshop exercises, there are four primary questions that need to be answered at each step of the design process:

1. Does the feature meet its intended function?
2. Does it enhance the environment and the overall ecology?
3. Does it minimize immediate and long-term resource use?
4. Does it create a pleasant and functional environment for people?

Design Objective	Areas of Consideration
Produce innovative designs of a pedestrian oriented, ecologically sustainable mixed-use village.	<ul style="list-style-type: none"> <li>• Mixed Use portion of the site—medium and high density, commercial and employment uses.</li> <li>• Integration of additional uses into the Residential portion of the site.</li> <li>• Street Design.</li> </ul>
Create a mix of land uses that encourages modes of transportation other than the private automobile.	<ul style="list-style-type: none"> <li>• Live- Work opportunities.</li> <li>• Open space/parks system linkages within the community and beyond.</li> <li>• Roads as pedestrian linkages.</li> <li>• Compact development to support transit.</li> <li>• Convenient connections to transit.</li> </ul>
Create a streetscape, which is pedestrian in scale, promotes walking and social interaction while enhancing the ecological systems.	<ul style="list-style-type: none"> <li>• Road designs to respect lower priority to motorized traffic and primacy of pedestrians and bikeways.</li> <li>• Landscaping to make roadways into greenways and to enhance and not only minimize impact of parking areas, reduce on-street parking and create common parking areas.</li> <li>• Design to encourage active use of sidewalks and public spaces.</li> <li>• Street calming elements.</li> <li>• Create a pedestrian scale through an appropriate scale of building, heights, details and designs, road design and intersection spacing which is interesting, not intimidating, safe and easy to comprehend for an individual walking through a community.</li> <li>• Preserve and maintain vistas and views.</li> </ul>
Create a variety of housing densities and types appropriate to a range of households, densities which could support transit use and represent a compact urban form.	<ul style="list-style-type: none"> <li>• Investigate a variety of housing types in both the mixed use and residential portions of the site including live/work opportunities.</li> <li>• Create flexible and adaptable built forms.</li> </ul>
Encourage building design techniques, which minimize resource use and create a positive environment.	<ul style="list-style-type: none"> <li>• All buildings are considered to be environmentally friendly in construction techniques.</li> <li>• Building orientation to incorporate passive solar heating and cooling and consider elements to improve microclimates.</li> <li>• Building and site design should incorporate a high level of continuity to encourage pedestrian activity.</li> </ul>

Reintroduce the natural ecosystem into the village.	<ul style="list-style-type: none"> <li>Renaturalization of a minimum of 60% of park areas and potential creek system.</li> <li>Roof top gardens.</li> <li>Urban agriculture.</li> <li>Landscaping to connect buildings to road greenway system - No/Minimize lawns.</li> <li>Use of landscaping to support passive solar orientation.</li> <li>Use of indigenous species, plant diversity, recreation of habitat.</li> <li>Maximize use of green products such as permeable pavers.</li> <li>Open space to produce ecological, social and recreational benefits.</li> </ul>
Create an identity for the Eco-Tech Village.	<ul style="list-style-type: none"> <li>Consider the possibilities to create a specific identity for the Eco -Tech Village that reflects the vision of the community.</li> <li>Create a focal point for the village.</li> </ul>
Design the elements to serve multiple functions.	<ul style="list-style-type: none"> <li>Consider the add-on opportunities for each community element to increase ecological activity and reduce resource use.</li> </ul>

## Principles Common to all Designs

All the teams considered a range of design features making choices toward sustainability. These choices included energy options and renewable energy sources, standard building design of R2000 for residential buildings and C2000 for commercial buildings, flexible and adaptable building forms, water conservation measures, reducing parking standards, naturalization of the site using indigenous species, plant diversity, recreation of habitat, and adding opportunities to increase ecological activity and reduce resource use.

### Team I: Green Team

The design generated by Team I is constructed with three main community elements: the mixed-use area, a transition area and a lower density residential area. The Team met and exceeded the requirements set out in the work program in terms of uses and densities for development. Natural corridors, roads, bike paths and park systems as well as views to the Niagara Escarpment were evaluated for opportunities and barriers. These connections are important as they provide opportunities to maximize solar orientation. By designing roads with ecological features, roads can function as linkages between green spaces as well as bike paths connecting the community elements.

The Mixed Use Area is designed as a mini- main street with the commercial uses hinged on the Louis St. Laurent Boulevard collector road access and with residential and office units above these commercial uses. To reduce the heat island effect of parking areas, extensive planting of deciduous trees will be needed. A reduction in the light pollution from the parking areas could be achieved by the use of low-level lighting. As the parking areas will

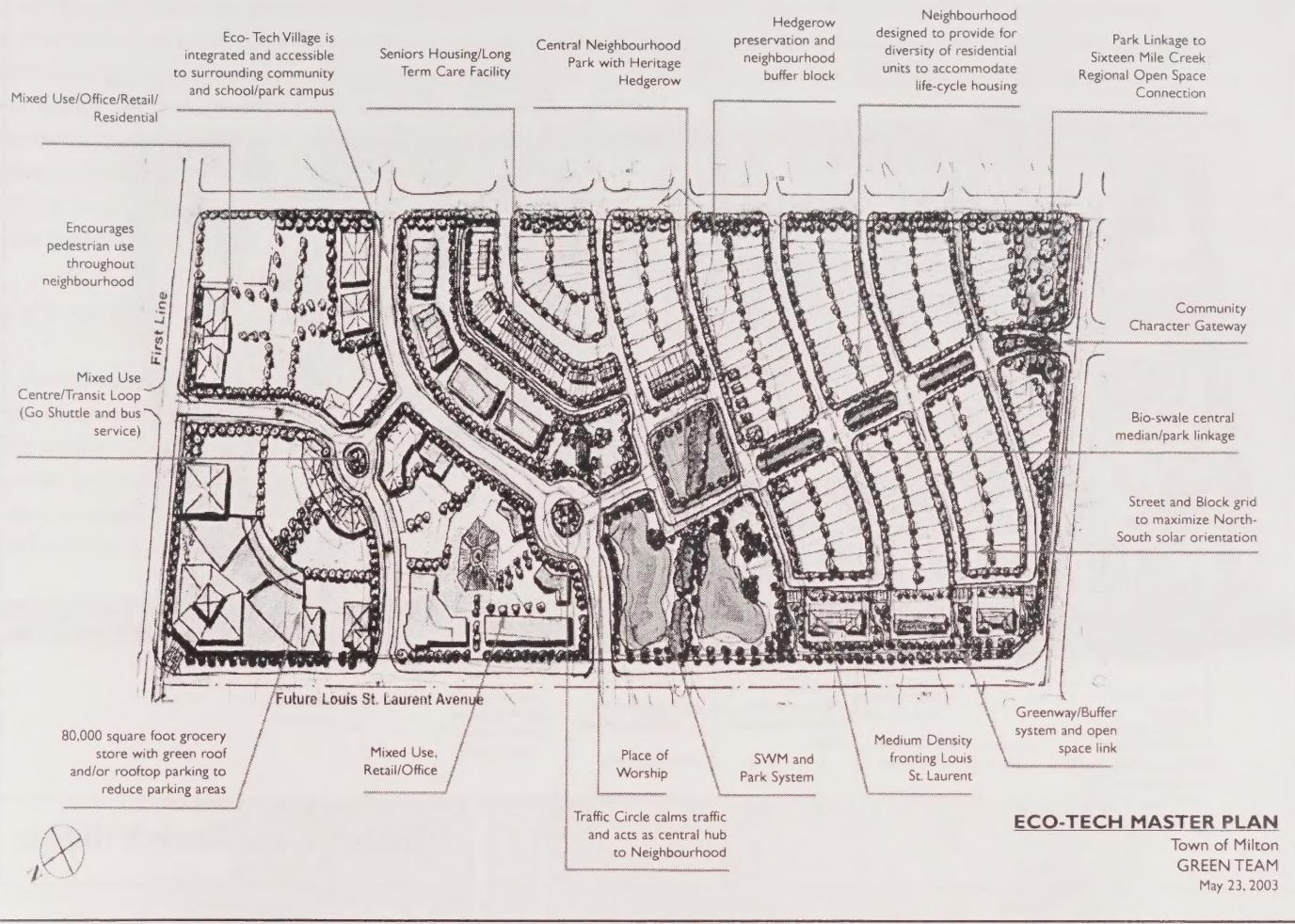
have different demands at different times, there are opportunities for shared parking of communal parking areas. The community was designed so that people would enjoy walking through the village on a clearly linked path network.

The mixed-use nature of this node provides opportunities for district energy systems. Energy reduction could also be achieved by reduced demand for lighting, the support of transit and the use of passive solar techniques. By using different planting materials and increased tree planting, biodiversity can be added as well as water conservation.

Progressing east of the mixed-use node, a transition from higher densities to low and medium densities is established. This transition provides opportunities for lifecycle housing and seniors' residences and incorporates traffic calming measures, which also serve to define the transition between the mixed-use node and the residential areas.

The residential portion of the site was also designed to provide for diversity of residential units to accommodate lifecycle housing by using a block plan, which could accommodate singles, semis or townhouses. The orientation of the grid pattern maximized the north south solar orientation and the passive solar opportunities.

## Team 1: Green Team



## Team 2: Red Team

Central to this proposal is the Eco Common. It extends north from the Village Square bounded by the Eco Parkway, and smaller storm water ponds extending along the Parkway on one side and low-density bungalow lifestyle homes on the other side. In between is a common area, capable of supporting small-scale gardening agricultural activity. The Eco-common features homes for the older cohort (empty nester, retiree), accessed by lanes and easily accessible public garden plots.

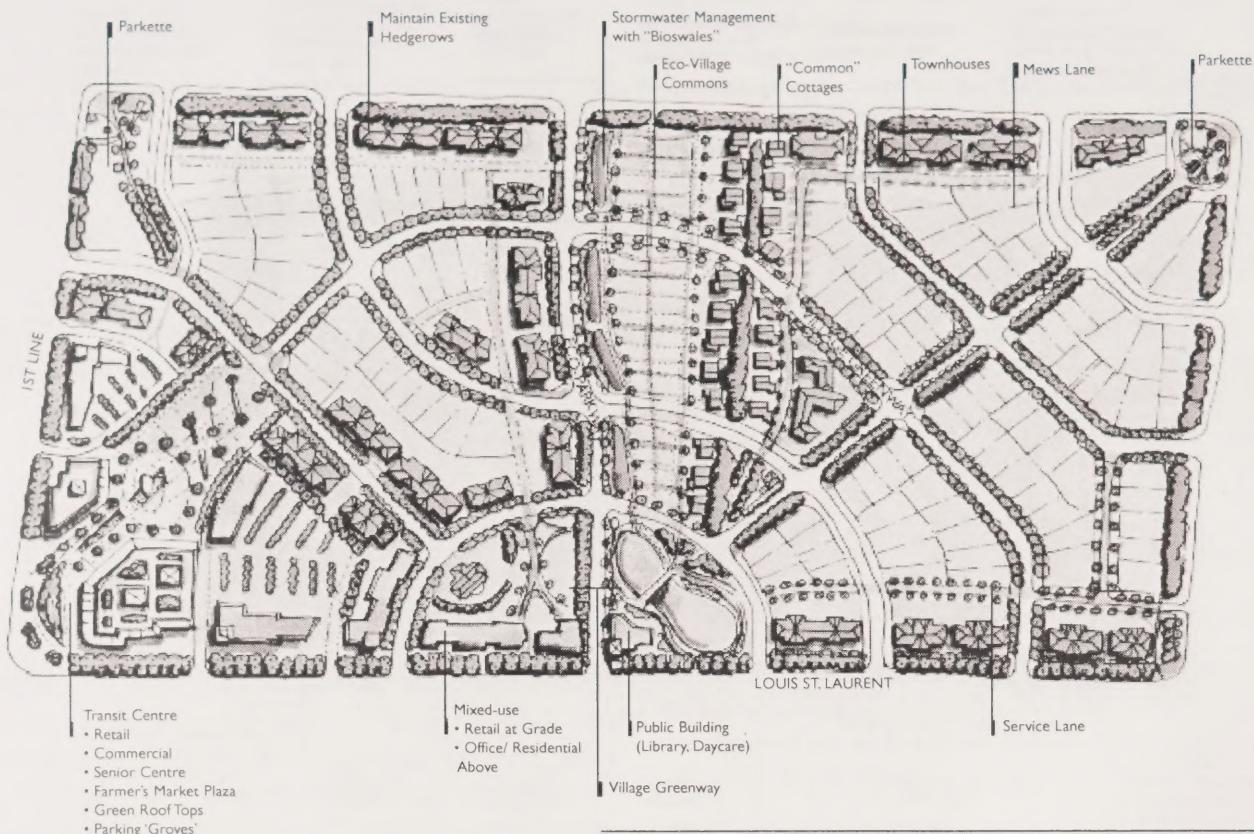
Within the Mixed Use Node, the Red Team proposed to create a village atmosphere, which was small in size and scale, with low profile structures and a shop front theme. Although this would be the most intensive area of development, one of the main objectives would be a design which would encourage people to use their cars less. Higher density residential, live-work opportunities and possibly other uses compatible with residential uses would extend along First Line and Louis St. Laurent Boulevard. The interior of the block would include a common area and lower housing density forms.

Medium density (three to four storey) and live/work opportunities are found along the First Line extending away from the mixed-use node. The same opportunity exists along Louis St. Laurent Boulevard extending away from the Village Square.

The Village Square is located at the midpoint block along Louis St. Laurent Boulevard, beside the main storm water management ponds. It is bounded by a semi ring road. The Village Square functions as a multiuse area with recreational, institutional, higher density residential, and small-scale office uses.

The Red Team focused on developing a road pattern, which functioned to link the village, the Greenway east to west and the Eco Parkway north to south. These major roadways are defined by enhanced tree plantings along their length. The major destination for the Greenway is the mixed-use node. The Parkway, which intersects with Louis St. Laurent Boulevard at the midpoint of the block, serves as the gateway entrance to the Village Square. These are multifunctional, serving as green links in the village, with rights-of-way widths adequate to also accommodate pedestrian and cyclist needs.

## Team 2: Red Team



## Milton Eco-Tech Village

### Team 3: Blue Team

The dominant focus of this teams' work was on creating a green mosaic across the village. These discussions centered on: alternative landscaping treatments (landscape options at the time of purchase of units); green roofs; use of rain barrels with trickle irrigation; fine grading for greater infiltration (in the construction of bio-swales, rain gardens, self watering gardens); shade trees/boulevard trees; green driveways; boulevard green parking spaces; introduction of urban agriculture (grow your own common plots available for public use); wind breaks; multi-species hedgerows; front and back yard plantings; wind deflectors; and green fences.

Creating a balance between contemporary urban design and the environment was the focus of the master plan created by the Blue Team. The plan consists of a central corridor focusing on the pond and the gateway to Louis St. Laurent Boulevard, a commercial district with a central spine connecting to transit with surrounding residential neighbourhoods varying in form and structure.

The master plan is structured around two village squares with denser building forms radiating out. The road pattern contains a linkage to the transit node and the plan includes greenways as walking and bike connections through the community. The transit node is designed with a lay-by for buses surrounded by a variety of land uses.

The valley corridor down the middle of the plan creates a living centre to the village, which is more formal in character and a central space for the village. Flexible housing in the form of townhouses is proposed around the Village Square, which contains a parkette, community gardens and a splash pad. These housing units could have an unfinished attic instead of a basement to minimize movement of fill off the site. An eco co-op has been placed in the northeast corner of the plan. The housing

form is a type of cluster housing, which is car free with a potential car share program. Additional flexibility in housing forms, including live/work units, has been included along the east and south edge of the community. Throughout the plan, the principle of district energy systems was adopted where possible so that buildings can take on more than one function and produce and distribute energy.

Along Louis St. Laurent Boulevard, live/work units and ground floor commercial/office with residential provide buffering to the arterial road and reduce the potential for noise walls. This street should be constructed with sidewalk activities to promote pedestrian movement and should include consideration of solar street lighting. The amount of pavement should be reduced for components of the road network. Along the main collector roadway, a greenbelt should be constructed with three metres for a trail and three metres for parking and include a biofilter system for storm water treatment.

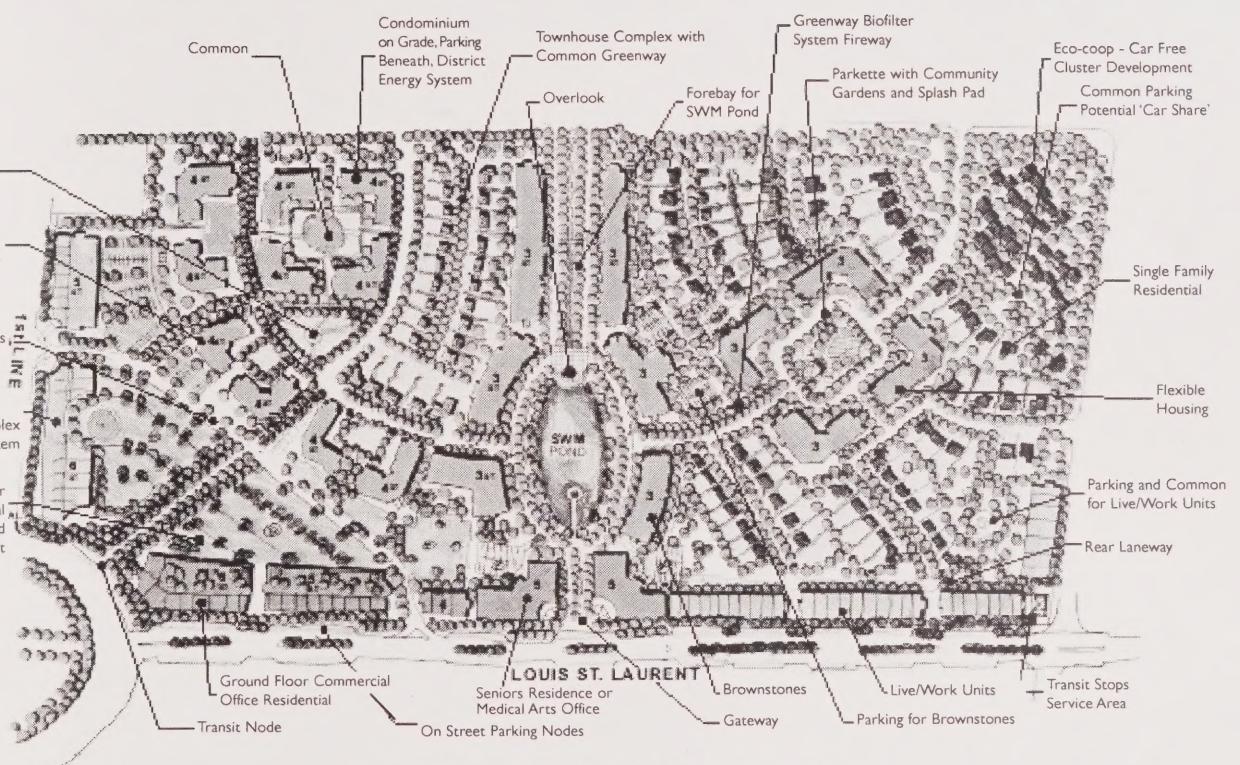
## NEXT STEPS

The charrette exercise provided the Town and the developer with a visual image of what an Eco-Tech Village could be. The charrette helped build a common language around what "sustainability" means for this community and provided practical and realistic options for community design. In many ways the charrette was a pivotal moment in bringing the Eco-Tech Village project forward.

The Town of Milton used the charrette results to update and refine the Secondary Plan policies for the Eco-Tech Village. The Town also used these results to refine the other implementation tools such as the Sustainable Development Guidelines for municipal and private infrastructure.

Mattamy Development Co. is now in the process of preparing the required development applications for the Eco-Tech Village. Although the final development plan for the community will most likely not directly incorporate one of the Master Plans contained within this Report, the majority of the core elements of the community design reflected in all the master plans shown here are expected to be incorporated within the final development proposal for this site.

### Team 3: Blue Team



**CMHC Project Manager:** Cynthia Rattle

**Municipal Contact:** Bill Mann, Town of Milton

**Project Consultant:** Ruth Victor, B.G.D. Consulting Inc.

### **Housing Research at CMHC**

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K1A 0P7

Phone: 1 800 668-2642  
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